Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-12/0148 of 11 January 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Insulation support - metal nail KEW TSDL-V and TSD-V WS
Product family to which the construction product belongs	Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	KEW Kunststofferzeugnisse GmbH Wilthen Dresdener Straße 19 02681 Wilthen DEUTSCHLAND
Manufacturing plant	KEW Kunststofferzeugnisse GmbH Wilthen Dresdener Straße 19 02681 Wilthen DEUTSCHLAND
This European Technical Assessment contains	13 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330196-01-0604
This version replaces	ETA-12/0148 issued on 22 March 2017

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Specific Part

1 Technical description of the product

The nailed-in anchor KEW TSDL-V and TSD-V WS consists of an anchor sleeve made of virgin polypropylene and an accompanying specific nail of galvanised steel or stainless steel. The serrated expanding part of the anchor sleeve is slotted.

The anchor type KEW TSDL-V may in addition be combined with the insulation discs DSB 90, DSB 110 or DSB 140. The head of the special nail for this anchor type has an additional plastic coating.

An illustration and the description of the product are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic tension resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 2
Displacements	See Annex C 2

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330196-01-00-0604, the applicable European legal act is: [97/463/EC].

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

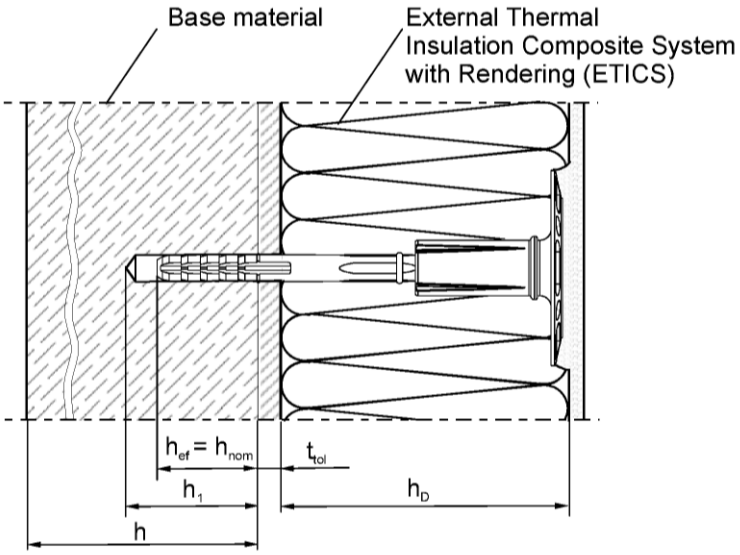
Issued in Berlin on 11 January 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

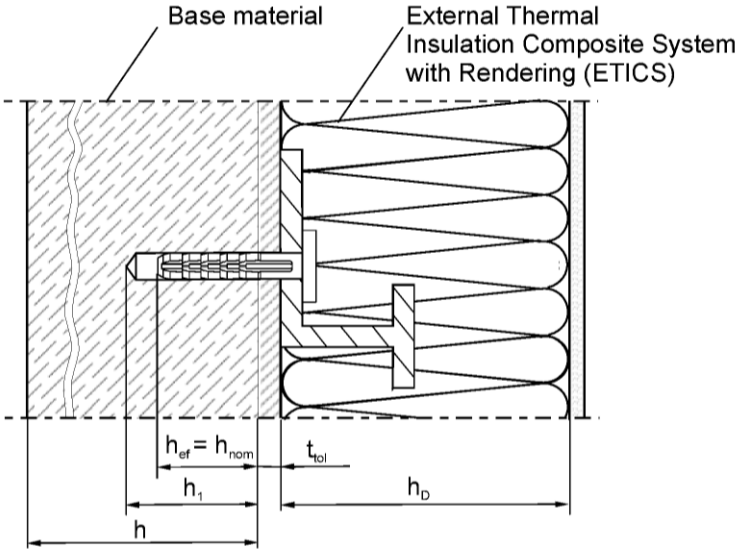
beglaubigt:
Ziegler

Deutsches Institut für Bautechnik

TSDL-V



TSD-V WS



Legend

h_{ef} = effective anchorage depth
h_1 = depth of drill hole to deepest point
h = thickness of base material (wall)
h_D = thickness of insulation material
t_{tol} = thickness of equalizing layer or non-load bearing coating

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS	**Annex A 1**
Product description Installed condition	

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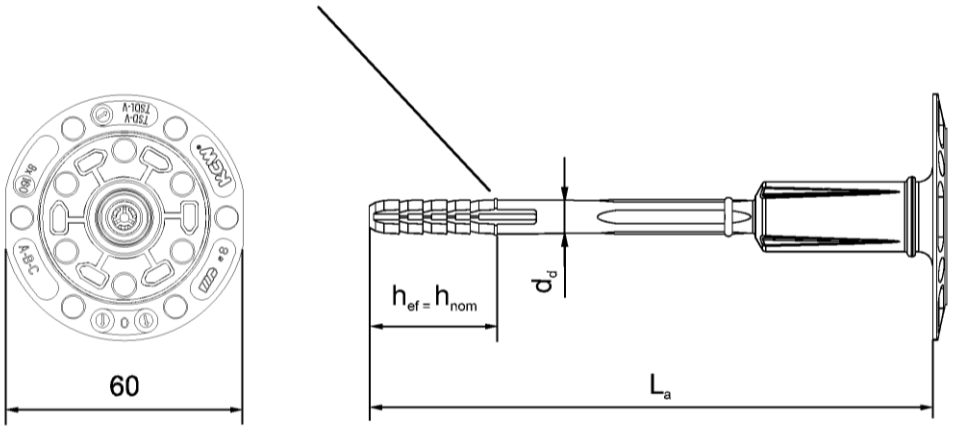
TSDL-V

marking of effective anchorage depth (A-B-C)



Marking

Company logo – (KEW®)
Anchor type – (TSDL-V)
Diameter of drill hole – (ø8)
Length of anchor – (e.g. 160)

Special nail with special head

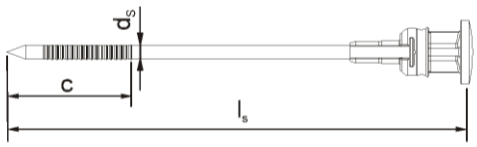


Table A1: Dimensions TSDL-V

Anchor type	Anchor sleeve				Special nail		
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]	d_s [mm]	c [mm]	l_s [mm]
KEW - TSDL-V	**120**	**300**	**8**	**30**	**4,0**	**35**	**L_a + 4mm**
Determination of max. Thinkness of insulation [mm]: $h_{Dmax} = L_a - h_{ef} - t_{tol}$							
e.g.: TSDL-V 8x160	**L_a= 160**		**h_{ef}= 30**		**t_{tol}= 10**		
	thickness of insulation material **$h_{D\,max.}$ = 120**						

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Annex A 2

Product description
Marking and dimensions of the anchor sleeve TSDL-V
spreading element / special nail

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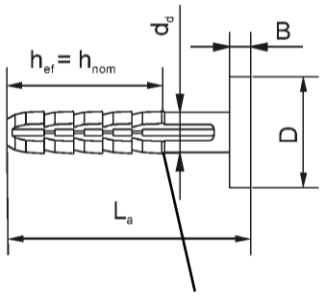
TSD-V WS



B ≥ 2,5mm
D ≥ 16mm

marking of effective anchorage depth

Special nail

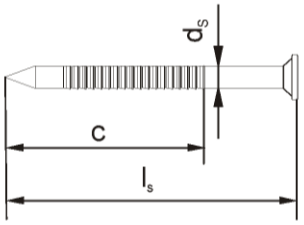


Table A2: Dimensions TSD-V WS

Anchor type	Anchor sleeve				Special nail		
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]	d_s [mm]	c [mm]	l_s [mm]
KEW - TSD-V WS	**50**	**250**	**8**	**30**	**4,0**	**35**	**L_a + 4mm**

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Annex A 3

Produktbeschreibung
Marking and dimensions of the anchor sleeve TSD-V WS
spreading element / special nail

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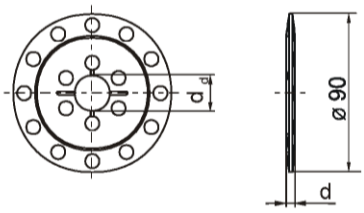
Table A3: Materials

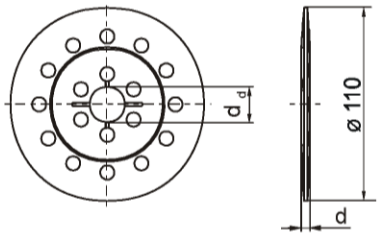
Member	Material
Anchor sleeve	virgin Polypropylen, colour: papyrus white
Special nail	Steel, galvanized A2L or A2K according to EN ISO 4042:1999
	Stainless steel; mat.No. 1.4401, 1.4571 according to EN ISO 3506:2010

Table A4: Insulation discs, diameters and material

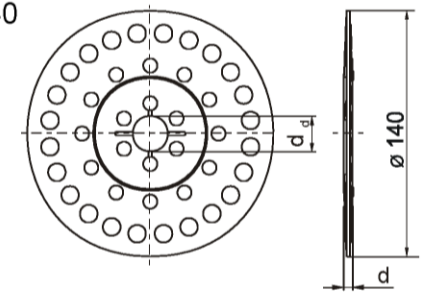
DSB 90



DSB 110



DSB 140



Insulation discs	Ø D [mm]	Ø d_d [mm]	d [mm]	Material
DSB 90	90	20	5	PA 6, PP
DSB 110	110	20	5	PA 6, PP
DSB 140	140	20	5	PA 6, PP

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Product description
Materials
Additional plates in combination with KEW TSDL-V

Annex A 4

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Specifications of intended use

Anchorages subject to:

- The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C1.
- Solid masonry (use category B), according to Annex C1.
- Hollow or perforated masonry (use category C), according to Annex C1.
- For other base materials of the use categories A, B or C the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051 edition December 2016.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors γ_M = 2,0 and γ_F = 1,5, if there are no other national regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS	**Annex B 1**
Intended use Specifications	

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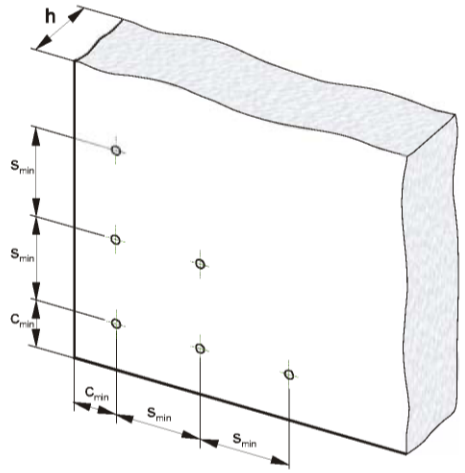
Table B1: Installation parameters

Anchor type			KEW- TSDL-V
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45
Depth of drilled hole to deepest point	$h_1 \geq$	[mm]	40
Effective anchorage depth	h_{ef} =	[mm]	30

Table B2: Anchor distances and dimensions of members

			KEW- TSDL-V
Thickness of member	h ≥	[mm]	100
Minimum allowable spacing	s_{min} =	[mm]	100
Minimum allowable edge distance	c_{min} =	[mm]	100



Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS	Annex B 2
Intended use Installation parameters, Anchor distances and dimensions of members	

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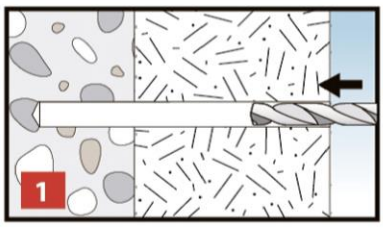
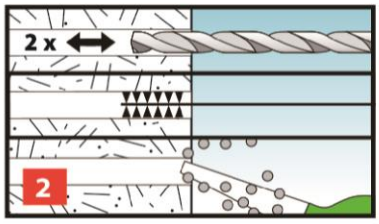
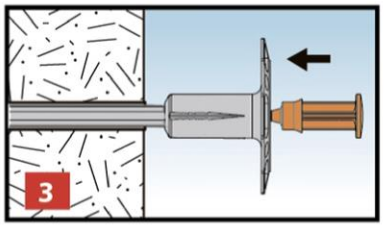
Installation instructions



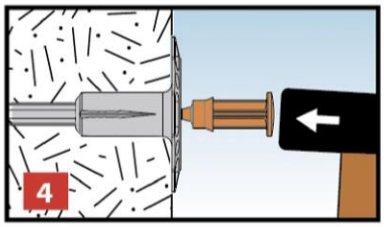
Create a hole considering the drill method according Annex C 1



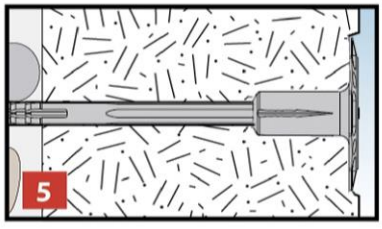
Holes to be cleaned of drilling dust.



Insert the anchor into the hole until the plate rests on the insulation.



Hammer in the nail with a matching hammer



Flush mounted installation

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS	**Annex B 3**
Intended use Installation instructions	

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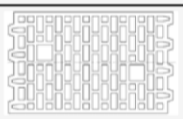
Table C1: Characteristic resistance N_{Rk} in concrete and masonry for a single anchor in kN

Base material	Bulk density ρ [kg/dm³]	Minimum Compressive strength f_b [N/mm²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15			EN 206-1:2000	Hammer drilling	**1,2**
Concrete C16/20 – C50/60			EN 206-1:2000	Hammer drilling	**1,5**
Sand-lime solid bricks, KS e.g. acc. to EN 771-2:2011	≥1.8	12	Vertically perforation up to 15%	Hammer drilling	**1,5**
Clay bricks, Mz e.g. acc. to EN 771-1:2011	≥1.7	20	Vertically perforation up to 15%	Hammer drilling	**1,5**
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥1.0	12	Vertically perforation more than 15% and less than 50% outer web thickness ≥ 12mm	Rotary drilling	**0,9**
Vertically perforated sand-lime bricks KS L, e.g. acc. to EN 771-2:2011	≥1.4	12	Vertically perforation more than 15% outer web thickness ≥ 22mm	Rotary drilling	**1,2**
Lightweight concrete hollow blocks, Hbl e.g. acc. to EN 771-3:2011	≥0.8	2	 outer web thickness ≥ 50mm	Rotary drilling	**0,6**
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥0.9	12	 outer web thickness ≥ 10mm	Rotary drilling	**0,75**
Lightweight concrete solid blocks, Vbl e.g. acc. to EN 771-3:2011	≥0.8	2	 outer web thickness ≥ 43mm	Hammer drilling	**0,6**

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS	**Annex C 1**
Performances Characteristic resistance of the anchor in concrete and masonry	

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Table C2: Displacements

Base material	Bulk-density-class ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15 EN 206-1:2000			0,4	0,2
Concrete C16/20 – C50/60 EN 206-1:2000			0,5	0,2
Sand-lime solid bricks, KS e.g. acc. to EN 771-2:2011	≥1.8	12	0,5	0,3
Clay bricks, Mz e.g. acc. to EN 771-1:2011	≥1.7	12	0,5	0,3
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥1.0	12	0,3	0,1
Vertically perforated sand-lime bricks KS L, e.g. acc. to EN 771-2:2011	≥1.4	12	0,4	0,3
Lightweight concrete hollow blocks, Hbl e.g. acc. to EN 771-3:2011	≥0.8	2	0,2	0,2
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥0.9	12	0,25	0,1
Lightweight concrete solid blocks, Vbl e.g. acc. to EN 771-3:2011	≥0.8	2	0,2	0,1

Table C3: Point thermal transmittance according to EOTA Technical Report TR 025:2016-05

Anchor type	Thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
KEW TSDL-V (galvanized steel)	50[1)] - 270	0,002
KEW TSDL-V (stainless steel)	50[2)] - 270	0,001

[1)] for vertically perforated bricks and h_D = 50 mm: χ = 0,001 W/K
[2)] for concrete and h_D = 50 mm: χ = 0,002 W/K

Table C4: Plate stiffness according to EOTA Technical Report TR 026:2016-05

Anchor type	Diameter of anchor plate [mm]	Load resistance of anchor plate [kN]	Plate stiffness [kN/mm]
KEW TSDL-V	60	1,75	1,24

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Performances
Displacements, point thermal transmittance, plate stiffness

Annex C 2